Crushing Chemistry

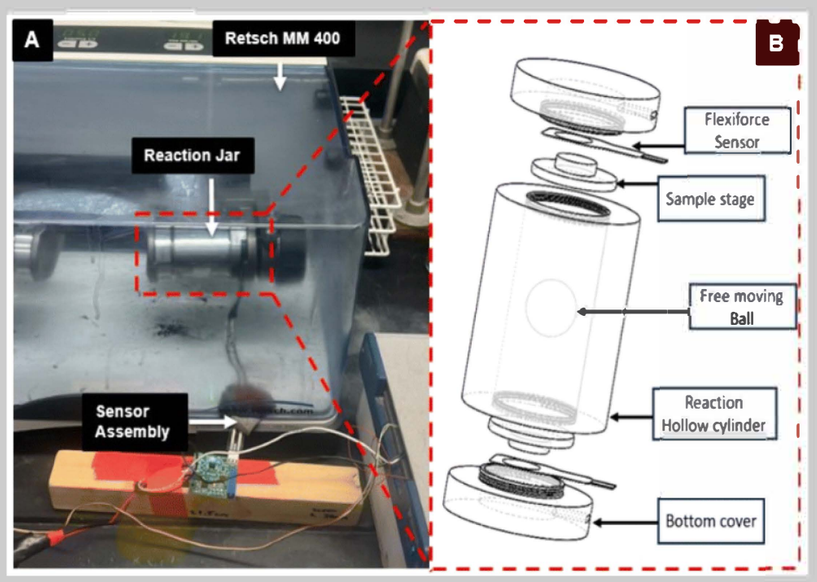
NSF Center for the Mechanical Control of Chemistry

October 2025

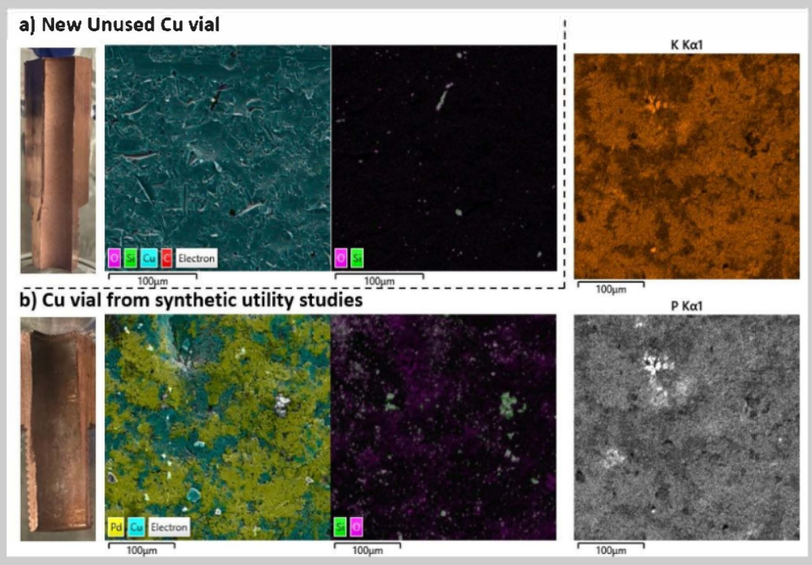
Tzu-Hsuan Chao Receives Phil Gramm Doctoral Fellowship

Tzu-Hsuan Chao, a PhD candidate in the Tabor group at Texas A&M University, has been named a 2025 U.S. Senator Phil Gramm Doctoral Fellowship Award winner. His research applies machine learning techniques to tackle challenges in protein modeling and the prediction of material properties. Tzu-Hsuan has mentored undergraduate students in the lab and served as a teaching assistant for graduate-level quantum chemistry. He is dedicated to helping students navigate the field of physical chemistry, and this award recognizes both his scientific contributions and his commitment to mentorship. **Congratulations, Tzu-Hsuan!**

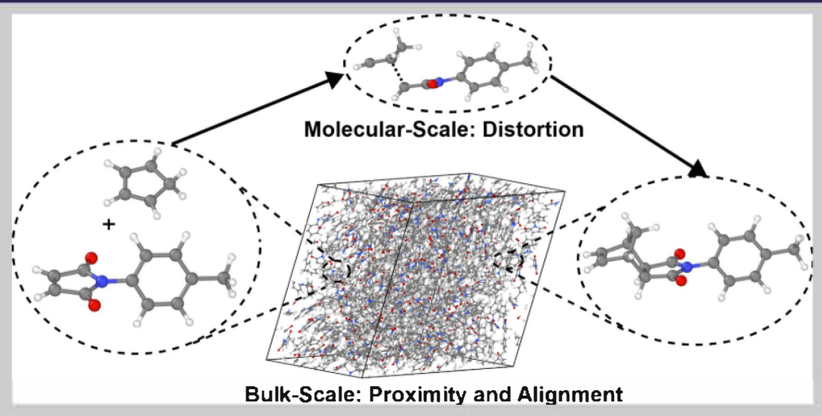
Three New Publications in *RSC Mechanochemistry*



Nwoye, E., Floyd, K., Batteas, J., & Felts, J. (2025). Experimental quantification of impact force and energy for mechanical activation in vibratory ball mills. *RSC Mechanochemistry.* https://doi.org/10.1039/D5MR00059A



Shah, S., Mokhtar, M., Tran, T., Floyd, K.R., Mella, L., Dao, T., Garza, A., Batteas, J., & Mack, J. (2025). Scratching beneath the surface: catalyst evolution and reusability in the rirect mechanocatalytic Sonogashira reaction. *RSC Mechanochemistry*. https://doi.org/10.1039/D5MR00060B



Kumar, S., Carpick, R., & Martini, A., (2025). A classical potential-based framework for modeling mechanochemical reactivity via molecular distortion: demonstration for a Diels–Alder reaction. *RSC Mechanochemistry.* https://doi.org/10.1039/D5MR00099H

Prediction of Mechanosusceptible Reactions Using Molecular Distortions

This month, Professor Mateusz Marianski, Associate Professor of Chemistry at Hunter College and a lead investigator at the CMCC, joined our CMCC Mechanochemistry Discussions Seminar Series. He shared how his lab is using computational methods to understand how small uniaxial forces and molecular distortions can accelerate chemical reactions. His work aims to build a theoretical framework that predicts which reactions are most susceptible to mechanical activation. Visit our channel to watch his seminar and learn more.

We want to hear from you! Scan the QR code to take a short survey about our seminar series.

Scan the QR code to access the Spanish version!
¡Escanee el código QR para acceder a la versión en español!

CMCC Fall All-Hands Meeting at the Science History Institute

This October, the CMCC gathered at the Science History Institute in Philadelphia, Pennsylvania, for its annual fall all-hands meeting. During the meeting, center members shared new ideas and discussed ambitious goals for the years ahead. In addition to research discussions and professional development activities, attendees enjoyed a private tour of the museum and participated in a lunch and learn session with Anna Doel and Melissa Rossi, authors of the CMCC–SHI collaborative pieces published earlier this year. Thank you to all the Center members who took part in this productive and inspiring meeting!

Fritsch Demo Day at Texas A&M University

On October 7, Fritsch Milling and Sizing visited Texas A&M University and partnered with the Materials Characterization Facility and the CMCC for a demo day focused on dynamic image analysis and high-energy milling. Participants attended a seminar led by Jeff Scott, Vice President of Business Development at Fritsch, that showcased their A-28 Particle Analyzer and the P-7 Premium Planetary Mill, followed by two hands-on demonstrations.

Dr. Antillon Shares Insights on PhD Career Pathways at UC Merced

Dr. Francesca Antillon, Director of Outreach and Education at the CMCC, was invited by Dr. Ashlie Martini, Professor and Department and Graduate Chairs in the Mechanical Engineering department, to give a seminar at the University of California, Merced. She presented, “PhD Pathways: Non-Traditional Careers Beyond Academia and Industry,” to graduate students in the mechanical engineering department.